UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

February 3, 2006

PIETRAGALLO, BOSICK & GORDON, LLP
301 GRANT STREET
ONE OXFORD CENTRE, 38TH FLOOR
PITTSBURGH, PA 15219-6404
US

Dear Sir/Madam,

Your refund request for 10678290 in the amount of $100.00 has been denied .

The Patent Office does not refund money for claims that are withdrawn.

Sincerely,

ELEANOR KURTZ
Technical Center Others
703 308-9010 x177

P.O. Box 1450, Alexandria, Virginia 22313-1450 – WWW.USPTO.GOV

PATENT MAINTENANCE
DIVISION

2006 JAN 18 PM 4:28

US PATENT & TRADEMARK
OFFICE

PIETRAGALLO, BOSICK & GORDON LLP
Attorneys at Law
301 Grant Street
One Oxford Centre, 38th Floor
Pittsburgh, PA 15219-6404
USA
Telephone Number: (412) 263-2000
Direct Fax: (412) 261-0915
Alternate Fax: (412) 261-5295

FACSIMILE TRANSMISSION COVER PAGE

DATE: January 18, 2006

RECIPIENT: Latrice Sims

COMPANY: USPTO Office of Finance

RECIPIENT'S FAX NO.: (571) 273-6500

FROM: Christine J. Graff

FILE NUMBER: U.S. Serial No. 10/678,290; Filed October 3, 2003
(Atty. Docket No 97-2301 (370024-00006))

PAGES (including cover page): 30

MESSAGE:

Please process a refund in the amount of $100 to Deposit Account 500859 (in the name of Pietragallo, Bosick & Gordon). Please issue a credit to the account.

On April 5, 2005 and on May 4, 2005, $50 (in both occurrences) was charged to our account for excess claims fees. This is not a Pietragallo, Bosick & Gordon patent application. As you can see by the attached amendment, the customer number listed is 08840 and the charges should have been debited from the corresponding Deposit Account.

Please call me directly if you require any additional information.

Attachments:
- April 2005 Deposit Account Statement for Deposit Account 500859 (2 Pages)
- May 2005 Deposit Account Statement for Deposit Account 500859 (2 Pages)
- Copy of Amendment (printed from USPTO Application Data – Image File Wrapper) –
- (24 Pages)

SENT BY: Christine J. Graff TELEPHONE NUMBER: (412) 263-4371

CONFIRMATION COPY:

☐ VIA U.S. MAIL ☐ VIA INTERNATIONAL FEDERAL EXPRESS

☐ VIA AIR MAIL ☒ NONE

United States Patent and Trademark Office

Deposit Account Statement

Requested Statement Month:	April 2005
Deposit Account Number:	500859
Name:	PIETRAGALLO, BOSICK, & GORDON
Attention:	ALAN G. TOWNER, ESQ.
Address:	ONE OXFORD CENTRE 38TH FLOOR
City:	PITTSBURGH
State:	PA
Zip:	15219-6404
Country:	UNITED STATES OF AMERICA

DATE	SEQ	POSTING REF TXT	ATTORNEY DOCKET NBR	FEE CODE	AMT	BAL
04/04	20	10989777	NORT 64307	1051	$130.00	$14,490.00
→ 04/05	2	10678290	972301 (370024-00006)	1202	$50.00	$14,440.00 ←
04/07	20	5676185	NPC-67111	1552	$2,300.00	$12,140.00
04/12	3	E-REPLENISHMENT		9203	-$21,265.00	$33,405.00
04/12	5	10989774	NORT 64304	1051	$130.00	$33,275.00
04/12	6	10989774	NORT 64304	1251	$120.00	$33,155.00
04/12	45	11101795	IBIQ 69396	1011	$300.00	$32,855.00
04/12	46	11101795	IBIQ 69396	1111	$500.00	$32,355.00
04/12	47	11101795	IBIQ 69396	1311	$200.00	$32,155.00
04/12	48	11101795	IBIQ 69396	1201	$200.00	$31,955.00
04/12	50	10989777	NORT 64307	8021	$40.00	$31,915.00
04/12	52	10989774	NORT 64304	8021	$40.00	$31,875.00
04/12	128	09808898		8021	$40.00	$31,835.00
04/12	188	09808898		8021	$40.00	$31,795.00
04/12	337	10971217	NORT 64195	8007	$180.00	$31,615.00
04/12	1902	78606957	NPC 69604	7001	$325.00	$31,290.00
04/13	23	10991688	AMOS 67579	2051	$65.00	$31,225.00
04/13	96	10341975	S01.12-0937	1501	$1,400.00	$29,825.00
04/13	97	10341975	S01.12-0937	1504	$300.00	$29,525.00
04/13	98	10720872	SEAG 63445	1501	$1,400.00	$28,125.00
04/13	99	10720872	SEAG 63445	1504	$300.00	$27,825.00
04/14	48	29205369	NORT 67081	1502	$800.00	$27,025.00
04/15	12	78277396	LCE 62288	6005	$100.00	$26,925.00
04/15	48	11105128	SEAG 67711	1011	$300.00	$26,625.00
04/15	49	11105128	SEAG 67711	1111	$500.00	$26,125.00
04/15	50	11105128	SEAG 67711	1311	$200.00	$25,925.00
04/15	62	09808898		8021	$40.00	$25,885.00

04/15	73	09808898		8021	$40.00	$25,845.00
04/15	95	09808898		8021	$40.00	$25,805.00
04/15	105	11105139	SEAG 67060	1011	$300.00	$25,505.00
04/15	106	11105139	SEAG 67060	1111	$500.00	$25,005.00
04/15	107	11105139	SEAG 67060	1311	$200.00	$24,805.00
04/15	108	11105139	SEAG 67060	1202	$500.00	$24,305.00
04/15	126	11105133	SEAG 67708	1011	$300.00	$24,005.00
04/15	127	11105133	SEAG 67708	1111	$500.00	$23,505.00
04/15	128	11105133	SEAG 67708	1311	$200.00	$23,305.00
04/15	144	11105248	SEAG 67710	1011	$300.00	$23,005.00
04/15	145	11105248	SEAG 67710	1111	$500.00	$22,505.00
04/15	146	11105248	SEAG 67710	1311	$200.00	$22,305.00
04/15	147	11105248	SEAG 67710	1201	$200.00	$22,105.00
04/18	520	2240173	NPC 67288	7205	$100.00	$22,005.00
04/18	521	2240173	NPC 67288	7208	$200.00	$21,805.00
04/19	117	10012829	SEAG 48204	1801	$790.00	$21,015.00
04/19	118	10012829	SEAG 48204	1251	$120.00	$20,895.00
04/19	134	11106980	SEAG 65551	1011	$300.00	$20,595.00
04/19	135	11106980	SEAG 65551	1111	$500.00	$20,095.00
04/19	136	11106980	SEAG 65551	1311	$200.00	$19,895.00
04/19	163	11101795	IBIQ 69396	8021	$40.00	$19,855.00
04/20	93	6616889		8021	$40.00	$19,815.00
04/20	94	6776952		8021	$40.00	$19,775.00
04/21	35	10321058	IBIQ314ARCLTW	1501	$1,400.00	$18,375.00
04/21	36	10321058	IBIQ314ARCLTW	1504	$300.00	$18,075.00
04/21	36	10282891	GLOB 60047	2402	$250.00	$17,825.00
04/21	37	10282891	GLOB 60047	2253	$510.00	$17,315.00
04/21	40	09747143	WWS96-011	1501	$1,400.00	$15,915.00
04/21	41	09747143	WWS96-011	1504	$300.00	$15,615.00
04/21	56	11109442	NORT 67300	1011	$300.00	$15,315.00
04/21	57	11109442	NORT 67300	1111	$500.00	$14,815.00
04/21	58	11109442	NORT 67300	1311	$200.00	$14,615.00
04/21	109	11105139	SEAG 67060	8021	$40.00	$14,575.00
04/21	112	11105133	SEAG 67708	8021	$40.00	$14,535.00
04/21	116	10119057		8021	$40.00	$14,495.00
04/21	223	11105248	SEAG 67710	8021	$40.00	$14,455.00
04/22	175	11105128	SEAG 67711	8021	$40.00	$14,415.00
04/28	68	11109442	NORT 67300	8021	$40.00	$14,375.00
04/28	151	6312122	GTB-47821	2551	$450.00	$13,925.00
04/28	161	6232107	LUME-48413	1551	$900.00	$13,025.00
04/28	162	6232107	LUME-48413	1554	$130.00	$12,895.00

START BALANCE	SUM OF CHARGES	SUM OF REPLENISH	END BALANCE
$14,620.00	$22,990.00	$21,265.00	$12,895.00

United States Patent and Trademark Office

USPTO Home Page

Finance Online Shopping Page

Deposit Account Statement

Requested Statement Month:	May 2005
Deposit Account Number:	500859
Name:	PIETRAGALLO, BOSICK, & GORDON
Attention:	ALAN G. TOWNER, ESQ.
Address:	ONE OXFORD CENTRE 38TH FLOOR
City:	PITTSBURGH
State:	PA
Zip:	15219-6404
Country:	UNITED STATES OF AMERICA

DATE	SEQ	POSTING REF TXT	ATTORNEY DOCKET NBR	FEE CODE	AMT	BAL
05/02	323	78253123	GLOB 63097	7004	$150.00	$12,745.00
05/03	476	78326846	LOISE 64428	7003	$100.00	$12,645.00
05/04	6	10678290	972301 (370024-00006)	1202	$50.00	$12,595.00
05/05	17	09803211	24729-105G	2253	$510.00	$12,085.00
05/05	475	78623007	OFF-2	7001	$325.00	$11,760.00
05/06	17	11121778	BHH-70450	2011	$150.00	$11,610.00
05/06	18	11121778	BHH-70450	2111	$250.00	$11,360.00
05/06	19	11121778	BHH-70450	2311	$100.00	$11,260.00
05/06	20	11121778	BHH-70450	2202	$250.00	$11,010.00
05/06	21	11121778	BHH-70450	2201	$100.00	$10,910.00
05/10	39	10668589	ECT 63962	2252	$225.00	$10,685.00
05/10	40	10668589	ECT 63962	1806	$180.00	$10,505.00
05/10	86	10201131	CERA 52859	2801	$395.00	$10,110.00
05/10	87	10201131	CERA 52859	2253	$510.00	$9,600.00
05/11	3	E-REPLENISHMENT		9203	-$21,170.00	$30,770.00
05/11	131	6317470	WWS-96-011 (IBIQ-48305)	1551	$900.00	$29,870.00
05/12	56	11125436	SEAG 67870	1011	$300.00	$29,570.00
05/12	57	11125436	SEAG 67870	1111	$500.00	$29,070.00
05/12	58	11125436	SEAG 67870	1311	$200.00	$28,870.00
05/12	59	11125436	SEAG 67870	1201	$200.00	$28,670.00
05/12	60	11125436	SEAG 67870	1202	$200.00	$28,470.00
05/12	138	11125556	SEAG 67709	1011	$300.00	$28,170.00
05/12	139	11125556	SEAG 67709	1111	$500.00	$27,670.00
05/12	140	11125556	SEAG 67709	1311	$200.00	$27,470.00
05/12	1577	78382467	MPI 64495-5	7005	$100.00	$27,370.00
05/13	30	10256030		2501	$700.00	$26,670.00
05/13	31	10256030		1504	$300.00	$26,370.00

BEST AVAILABLE COPY

05/13	192	11125556	SEAG 67709	8021	$40.00	$26,330.00
05/13	203	11125436	SEAG 67870	8021	$40.00	$26,290.00
05/20	46	1354974	PRT 65284	6205	$100.00	$26,190.00
05/20	47	1354974	PRT 65284	6201	$400.00	$25,790.00
05/20	240	78633336	AST 70564	7001	$325.00	$25,465.00
05/20	1560	78408773	DWAG 65703	7001	$325.00	$25,140.00
05/23	64	11133091	BRAJ 69643	2011	$150.00	$24,990.00
05/23	65	11133091	BRAJ 69643	2111	$250.00	$24,740.00
05/23	66	11133091	BRAJ 69643	2311	$100.00	$24,640.00
05/23	67	11133091	BRAJ 69643	2201	$400.00	$24,240.00
05/23	68	11133091	BRAJ 69643	2202	$250.00	$23,990.00
05/25	383	PCT/US05/17571	NORT 70544	1601	$300.00	$23,690.00
05/25	384	PCT/US05/17571	NORT 70544	1704	$2,075.00	$21,615.00
05/25	385	PCT/US05/17571	NORT 70544	1702	$1,211.00	$20,404.00
05/25	386	PCT/US05/17571	NORT 70544	1703	$91.00	$20,313.00
05/25	387	PCT/US05/17571	NORT 70544	8007	$20.00	$20,293.00
05/25	1593	78636886	OFF 70741	7001	$325.00	$19,968.00
05/26	12	60683862	STTI 64493	2005	$100.00	$19,868.00
05/26	16	09915032	SW-00777	1501	$1,400.00	$18,468.00
05/26	17	09915032	SW-00777	1504	$300.00	$18,168.00
05/26	20	60683854	STTI 64494	2005	$100.00	$18,068.00
05/26	21	60683853	STTI 60848	2005	$100.00	$17,968.00
05/26	63	10340395	SPH-3	2401	$250.00	$17,718.00
05/26	64	10340395	SPH-3	2253	$510.00	$17,208.00
05/26	269	78637180	GOODT-1	7001	$325.00	$16,883.00
05/26	435	78637259	GOODT-2	7001	$325.00	$16,558.00

START BALANCE	SUM OF CHARGES	SUM OF REPLENISH	END BALANCE
$12,895.00	$17,507.00	$21,170.00	$16,558.00

Need Help? | USPTO Home Page | Finance Online Shopping Page

BEST AVAILABLE COPY

PTO/SB/97 (08-00)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

To: Janell Combs Morillo
Phone:
Fax: 703-872-9306

Total Number of Pages 24

RECEIVED
CENTRAL FAX CENTER
APR 29 2005

Certificate of Transmission under 37 CFR 1.8

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office

on April 29, 2005
Date

Signature

Daniel Mark Maloney, Reg. No. 43771
Typed or printed name of person signing Certificate

Note: Each paper must have its own certificate of transmission, or this certificate must identify each submitted paper.

Rioja et al.

USSN: 10/678,290

Filed: October 3, 2003

Confirmation No.: 3495

"Aluminum-Copper-Magnesium Alloys having Ancillary Additions of Lithium"

Attorney Docket: 97-2301 / (370024-00006)

Certificate of Transmission Cover Page (1 page)
Amendment (23 pages)

Burden Hour Statement: This form is estimated to take 0.03 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Examiner Janell Combs Morillo
Rioja et al.	Group Art Unit 1742
Serial No. 10/678,290	Atty. Docket No. 97-2301 [370024-6]
Confirmation No. 3495	
Filed October 3, 2003	
For "Aluminum-Copper-Magnesium Alloys Having Ancillary Additions of Lithium"	

RECEIVED
CENTRAL FAX CENTER
APR 2 9 2005

Supplemental Amendment

April 29, 2005

Facsimile No. 703-872-9306

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following supplemental amendment is intended to replace the amendment that accompanied the request for continued examination, previously filed on April 28, 2005. Please disregard the amendment filed on April 28, 2005.

Listing of claims to the claims begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) An aluminum alloy having good damage tolerance and fatigue crack growth resistance comprising from about 3 to about 5 weight percent Cu, from about 0.6 ~~0.5~~ to about 2 weight percent Mg, and from about 0.01 to about ~~0.9~~ 0.8 weight percent Li, up to about 2.0 weight percent Zn, up to about 2.0 weight percent Ag, up to about 1 weight percent of a grain refiner, the balance aluminum and incidental elements and impurities, and wherein the Cu and Mg are present in a controlled amount in the alloy such that they are present in a total amount below the solubility limit of the alloy.

2. (Currently Amended) The aluminum alloy of Claim 1, wherein the Li content is from about ~~0.1~~ 0.2 to about 0.8 weight percent.

3. (Original) The aluminum alloy of Claim 1, wherein the Li content is from about 0.2 to about 0.7 weight percent.

4. (Original) The aluminum alloy of Claim 1, wherein the Cu content is from about 3.5 to about 4.5 weight percent.

5. (Original) The aluminum alloy of Claim 1, wherein the Cu content is from about 3.6 to about 4.4 weight percent.

6. (Original) The aluminum alloy of Claim 1, wherein the Mg content is from about 0.6 to about 1.5 weight percent.

7. (Original) The aluminum alloy of Claim 1, wherein the Mg content is from about 0.7 to about 1.0 weight percent.

8. (Original) The aluminum alloy of Claim 1, wherein the Cu and Mg content conform to the formula: $Cu \leq 2 - 0.676\ (Mg - 6)$.

9. (Original) The aluminum alloy of Claim 1, wherein the Cu and Mg content conform to the formula: $Cu \leq 1.5 - 0.556\ (Mg - 6)$.

10. (Original) The aluminum alloy of Claim 1, further comprising from about 0.01 to about 2 weight percent Ag.

11. (Original) The aluminum alloy of Claim 10, wherein the Ag content is from about 0.05 to about 0.5 weight percent.

12. (Original) The aluminum alloy of Claim 10, wherein the Ag content is from about 0.1 to about 0.4 weight percent.

13. (Original) The aluminum alloy of Claim 1, further comprising from about 0.05 to about 2 weight percent Zn.

14. (Original) The aluminum alloy of Claim 13, wherein the Zn content is from about 0.2 to about 1 weight percent.

15. (Original) The aluminum alloy of Claim 13, wherein the Zn content is about 0.5 weight percent.

16. (Withdrawn) The aluminum alloy of Claim 1, further comprising from about 0.1 to about 2 weight percent Si.

17. (Withdrawn) The aluminum alloy of Claim 16, wherein said Si content is from about 0.1 to about 2 weight percent Si.

18. (Original) The aluminum alloy of Claim 1, further comprising at least one dispersoid-forming element selected from chromium, vanadium, titanium, zirconium, manganese, nickel, iron, hafnium, scandium and rare earth elements.

19. (Original) The aluminum alloy of Claim 18, wherein the at least one dispersoid-forming element is present in a total amount up to about 1.0 weight percent of the alloy.

20. (Original) The aluminum alloy of Claim 1, further comprising from about 0.2 to about 0.7 weight percent Mn.

21. (Original) The aluminum alloy of Claim 1, wherein the aluminum alloy is in the form of a sheet.

22. (Currently Amended) The aluminum alloy of Claim 1, wherein the aluminum alloy is in the ~~faint~~ form of a plate.

23. (Currently Amended) The aluminum alloy of Claim 1, wherein the aluminum alloy is in the ~~faun~~ form of an extrusion.

24. (Original) The aluminum alloy of Claim 1, wherein the aluminum alloy is in the form of a forging.

25. (New) An aluminum-copper-magnesium alloy product having an ancillary addition of lithium, said alloy product consisting essentially of:

3.0 to 5.0 wt.% Cu;

0.7 to 2 wt.% Mg,

0.01 to 0.8 wt.% Li,

a maximum of about 2 wt.% Si,

a maximum of about 2 wt.% Zn,

a maximum of about 2 wt.% Ag, and

at least one dispersoid-forming element selected from the group consisting of chromium, vanadium, titanium, zirconium, manganese, nickel, iron, hafnium, scandium and rare earth elements,

wherein said alloy, exhibits an improved fatigue crack growth resistance such that when aged to a T3 condition and tested per ASTM E647-95a in humid air (90% relative humidity at room temperature), with ΔK equal to 10 ksi√in, said alloy exhibits an increase of at least about 27% relative to a comparable lithium free alloy.

26. (New) An alloy product for use in aerospace damage tolerant aircraft parts having improved fatigue crack growth resistance, said alloy product consisting essentially of:

3.0 to 5.0 wt.% Cu;

0.7 to 2 wt.% Mg,

up to 2.0 wt.% Si,

up to 2.0 wt.% Zn,

up to 2.0 wt.% Ag, and

0.01 to 0.8 wt.% Li,

wherein said damage tolerant aircraft part is a fuselage panel or frame component, wing skin, rib, spar landing gear component, wheel, horizontal stabilizer, vertical stabilizer, pressure bulkhead, door frame, window frame, or wheel component.

Summary of Rejections

In ¶2 of the Office action, claims 1, 4-6, 8-12, 18, 19, and 21-24 have been rejected under 35 USC §102(b) as being anticipated by Pickens '003 (US Patent 5,455,003).

In ¶4 of the Office action, claims 2, 3, 7, 13-15, and 20 have been rejected under 35 USC§103(a) as being obvious in light of Pickens '003.

In ¶5 of the Office action, claims 16 and 17 are rejected under 35 USC§103(a) as being obvious in light of Pickens '003 in view of Rioja et al (US 5,137,686).

Legal Precedent Regarding Sections 102 and 103

The fundamental premise of anticipation §102 is that the prior art reference to disclose each and every element of the claim to which it is applied. *In re King*, 801 F.2d 1324, 1326, 231 USPQ 36, 138 (Fed. Cir. 1986). There must be no differences between the subject matter of the claim and disclosure for the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: absence from the applied reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

At present, Applicants note that the application of these legal standards by the United States Patent Office is similarly described in the Manual of Patent Examination and Procedures (the MPEP). In relevant part, the MPEP delineates specific procedures and provides guidance for the application of these standards for situations where, like here, there are range limitations that partially overlap or touch upon the disclosures of prior art.

In relevant part, when the prior art describes a range that touches/overlaps the claimed range, but does not disclose an example within the range, MPEP §2131 states,

> ...[A] case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious. *Emphasis added.*

Similarly, before addressing the above rejections under § 103, the Applicants would like to respectfully address legal precedent regarding 35 U.S.C. § 103. First, under §103, every claim at issue should be considered "as a whole" and the prior art likewise should be considered "as a whole", rather than using "selected bits and pieces from prior patents that might be modified to fit its legally incorrect interpretation of each claim as consisting of one word." A test rejected in *Panduit Corp v. Dennison Manufacturing Co.*, 1 USPQ 2d 1593, 1605 (Fed Cir. 1987).

Using this analytical framework, under § 103, a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 if the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103(a). The language "obvious at the time the invention was made" has been held by the Courts to mean that it is inappropriate for the Examiner to use "hindsight" in determining obviousness. *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082 (Fed. Cir.1985).

Nor can it be lawfully asserted that it would have been obvious, at the time of the Applicant's invention, to try varying conditions. "Obvious to try" has been expressly and repeatedly condemned as the standard under §103. *See, In re Geiger*, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987) and the case precedent cited therein, including *In re Goodwin*, 198 USPQ 1, 3 (CCPA 1978) which states:

> At best, the PTO has shown evidence that it would have been obvious to the skilled artisan to try Margrave's carbon monofluorides. However, this court has consistently refused to recognize "obvious to try" rejections. "As we have said many times, obvious to try is not the standard of 35 USC 103. *[Citation omitted]*

With respect to §103, the MPEP states that, to establish a *prima facie* case for obviousness, three basic criteria must be met: 1) a suggestion or motivation to modify the reference or combine the reference teachings; 2) a reasonable expectation of success; and 3) the prior art must teach or suggest all of the elements of the claim. See MPEP §2143.

Finally, should a *prima facie* case of obviousness be established by the office, this case may be overcome by sufficient objective evidence of secondary considerations. See MPEP §2141. In situations such as the instant claims, where the claimed ranges overlap or touch upon ranges disclosed in the prior art, the *prima facie* case may be overcome by 1) evidence of unexpected results; 2) an indication within the prior art that teaches away from the claimed range; and 3) evidence of the criticality of the claimed ranges. See MPEP §2144.

Argument

Introduction

Applicants respectfully traverse the rejection of the pending claims in the instant application.

First, Applicants' amendment to the claims traverses the rejection of claims 1, 4-6, 8-12, 18, 19, and 21-24 based on anticipation under 35 USC §102(b) by the Pickens '003 patent. (See Office Action, ¶2). The claims as amended no longer read or touch upon Pickens example "Q", the only specific example in the Pickens disclosure that may have fell within or touched upon the presently claimed ranges.

Second, Applicants traverse the rejection of the rejection of claims 2, 3, 7, 13-15, and 20 under §103 based on obviousness under 35 USC §103(a). (See Office Action, ¶4). Applicant's respectfully maintains that a *prima facie* case for obviousness has not been met, as the Pickens patent does not teach or suggest each and every element of the invention as presently claimed when said claims are read as a whole. For example, the limitations of claim 1, wherein the percent weight of Li is from about 0.10 to about 0.80 wt%, Mg is from 0.6 to 2.0 wt%, in concert with the limitation and "wherein the Cu and Mg are present in the alloy in a total amount below a solubility limit of the alloy" are neither disclosed nor suggested by Pickens '003. Charts 1 & 2, graphic representations of the alloying space described in Pickens and claimed herein, further demonstrate Picken's deficiencies in this regard.

Third, when read as a whole, Pickens '003 patent does not suggest or provide a motivation to select or use the range of elements, nor control the alloying elements to remain below the solubility limit as the invention is presently claimed. For example, Pickens '003 reiterates the well known facts that increasing amounts of Mg and Zn can be beneficial to a heat treatable alloy to increase the maximum attainable strength and toughness regardless of the Cu level and regardless of its effects on fatigue crack growth resistance. At the same time, Pickens depicts in its Fig. 3 that the increase in strength for a given amount of Mg addition tapers off/plateaus at about 0.6 wt.% Mg. In contrast, the present inventors have shown that Cu and Mg levels must be tightly controlled to remain at point below the solubility limit of the alloy (which may change due to the presence of other elements) in order to improve fatigue crack growth resistance, particularly with Mg at a level of 0.6 wt% or more.,

Finally, even if a *prima facie* case for obviousness were established, the criticality of the ranges of Cu, Mg and Li and are expressly taught in the specification and demonstrated by the test data submitted with the specific examples disclosed therein. These ranges produce an alloy with superior fatigue crack growth resistance and strength on a level necessary for aerospace applications.

Please note, although Applicants maintain that Rioja, et al. similarly fails to disclose or suggest the above-mentioned limitations (as asserted in ¶5 of the Office action), Applicants have withdrawn claims 16 and 17, in favor of new claims 25 and 26. New claims 25 and 26 recite limitations directed to improvements in fatigue crack growth resistance performance and to specific damage tolerant aerospace structural components. No new matter is submitted with these claims, and no additional fees are due as the total number of claims remains constant, and the total number of independent claims remains under 3.

I. Applicants Response to Paragraph 2 of the Office Action: Pickens Fails to Disclose the Instant Ranges with Sufficient Specificity to Anticipate the Present Claims

1. Claims 1, 4-6, 8-12, 18, 19, and 21-24 have been rejected as anticipated by the Pickens '003 application, under 35 USC §102(b). Applicants respectfully traverse this rejection.

2. Applicant has amended the claims to narrow the ranges of Li and Mg, and to more clearly describe that the amounts of Mg and Cu should be controlled to be below the solubility limit. In particular, the ranges of the alloy composition no longer read upon or touch Pickens '003's example "Q", the only specific example in the Picken's disclosure that arguably fell within or touched upon the claimed ranges of Cu, Mg, and Li.

3. As such, an anticipation rejection based on the disclosure of the Pickens '003 patent is unfounded. Nor is the invention as presently claimed suggested in Perkins with sufficient specificity to anticipate the present claims.

4. It would be apparent to one of ordinary skill, reading Pickens'003 examples, that the ranges of Mg Pickens favors is low, preferably lower than 0.6 wt.%. This is significantly lower than the range presently claimed.

5. For example, as seen in Table 2 of the Pickens patent, of the 33 examples given, the majority are between 0.3 and 0.40 wt.%. Only example Q in this Table was greater (at 0.60) than this range to a significant extent, and as seen in Table 3 of Pickens'003, the reported room temperature and low temperature strength for this alloy is mediocre when compared with preferred examples such as B and G, which both had yield strength and ultimate tensile strengths 10,000 pounds per square inch (e.g. 10 ksi) more than that reported for Q.

6. In addition, although Pickens later refers to higher Mg being related to better toughness, Pickens primarily teaches that "peak strengths [are]

attained at Mg levels of from about 0.3 to about 0.6 percent." Pickens, col 18:51-59. Moreover, in Fig. 3 of Pickens'003, the improvement in fracture toughness for increasing Mg is shown leveling off at 0.6 wt.% Mg and higher. One of ordinary skill would thus be directed by the Pickens patent to either use its preferred low Mg range, or greatly exceed this range to achieve improved strength. Thus, Pickens teachings and disclosures are internally contradictory: on the low end, this would be below the presently claimed range of Mg; on the high end, the teachings of Pickens would exceed the solubility limit of the alloy in substantial part and thus not achieve the present invention.

7. The generalized, non-specific, and contradictory nature of the Pickens disclosure is further seen by comparing Pickens Table 1 with Pickens Table 2. In Table 1, Pickens generically discloses Cu ranges from 2 to 6.5, Li ranges from 0.2 to 2.7, Ag up to 4.0, Mg up to 4.0 and Zn up to 3.0. See Pickens Table 1. In contrast, in Table 2, all but one example of Mg is 0.41 or below, the maximum Ag is 0.41, and the maximum amount of Zn used is 0.75 wt.%. See Pickens Table 2. Similarly, the "Most Pref." ranges in Table 1 have Li at 0.7-1-1 wt.%, centering on an amount above the present range, and Mg at 0.3-0.6 wt.%, which centers on and is in fact below the presently claimed range.

8. In short, the general teachings of the Pickens's patent broadly cover a wide but untested and unsupported range. In addition, its specific examples and teachings focus on ranges both substantially above (Li) and below (Mg) the

presently claimed range. Thus, applicants respectfully submit that Pickens'003 cannot be interpreted to teach the ranges of the present invention with the degree of specificity that rises to the level of anticipation under §102.

9. Finally, Pickens does not teach or suggest the critical importance of maintaining the alloying elements below the solubility limit of the aluminum alloy. As is taught in the application in ¶26, "The term "solubility limit" means the maximum amount of alloying additions that can be made to the aluminum alloy while remaining as a solid solution in the alloy at a given temperature. For example, the solubility limit for the combined amount of Cu and Mg is the point at which the Cu and/or Mg no longer remain as a solid solution in the aluminum at a given temperature." In practical terms, the solubility limits lines are depicted as lines 1 and 2 for given preferred embodiments in Fig. 1 of the specification. The box in Fig. 1 represents the alloy space, i.e. the weight percentages, of Mg and Cu in the present invention. Here, when the amounts of Cu and Mg are to the left of the solubility lines, the solubility limit of the alloy is exceeded. As has been found by the present inventors, those amounts to the left of the lines represent alloys where ancillary additions of Li will not lead to the formation of lithium containing δ phase precipitates. Specification, ¶37.

10. The understanding of those of ordinary skill in the art for these alloys has been that fracture toughness decreases with increasing strength, and that δ phase precipitates improve fatigue crack growth resistance (da/dn). Contrary to this

understanding, the present inventors found that fatigue crack growth resistance could be greatly improved by preventing the formation of these precipitates. Specification, ¶¶ 4, 44.

11. Pickens is silent in this regard, neither teaching nor suggesting the criticality of avoiding the formation of the δ phase precipitates. Nor does Pickens teach or suggest controlling the amounts of Mg, Cu or other alloying elements to prevent the formation of the δ phase in order to improve fatigue crack growth resistance.

12. Accordingly, Pickens neither teaches nor suggests, for aerospace components, the limitation of independent claim 1 "wherein the Cu and Mg are present in a controlled amount in the alloy such that they are present in a total amount below the solubility limit of the alloy." Nor does Pickens teach or suggest the mechanical property limitation, a da/dN increase of 27% or more as recited in new independent claim 25. Similarly, Pickens neither teaches nor suggests the damage tolerant aerospace components recited in claim 26.

13. In view of the above amendments and remarks, Applicants respectfully request the withdrawal of the rejection under 35 USC §102(b) found in ¶2 of the Office Action.

II. Response to Paragraph 4 of the Office Action

A. No Prima Facie Case Can be Made from the Pickens '003 Patent as it Does Not Teach or Disclose Every Element of the Claims as Asserted in ¶4 of the Office Action

14. Applicants respectfully request the withdrawal of the rejection found in ¶ 4 of the office action, where claims 2, 3, 7, 13-15 and 20, wherein these claims are rejected as obvious over Pickens'003 under 35 USC §103(a). Office Action, ¶4.

15. For example, the recitation of claim 1, and therefore, the limitations of the above listed depending claims, include recitations that the percent weight of Li is from about 0.10 to about 0.80 wt%, Mg is from 0.6 to 2.0 wt%, in concert with the limitation "and wherein the Cu and Mg are present in the alloy in a total amount below a solubility limit of the alloy" are neither disclosed nor suggested by Pickens '003.

16. First, as noted above, the alloying element ranges of the claims have been amended, and no longer significantly overlap Example Q disclosed by Pickens. Further, there are no other examples in Pickens of alloys with Cu and Mg at levels below the solubility limits of the alloy, and have ranges of Cu, Mg, and Li within the ranges as presently claimed.

17. Second, Pickens'003 patent does not provide a motivation to modify its disclosure. Instead. Pickens '003 teaches the importance of the amounts of Cu and Li, and the manipulation of process parameters.

18. For example, Pickens'003 patent further teaches that "The desirable trend [of cryogenic toughness] can be attained by controlling the levels of

copper and lithium, and by controlling processing parameters such as stretch, aging and recystallization of the alloys." Pickens'003, col. 5, 1-5.

19. Pickens'003 later reemphasizes this point, stating "In accordance with the present invention, the desirable cryogenic fracture toughness trend can be achieved by controlling Cu and Li levels... The desirable trend can be achieved for Cu levels of from about 2.0 to about 6.5% and lithium levels from about 0.2 to about 2.7%." Pickens, col. 17, 27-35.

20. Although Pickens'003 does indicate that Mg up to 1.0% is possible, it emphasizes that with respect to Mg, "peak strengths [are] attained at Mg levels of from about0.3 to about 0.6 percent." Pickens'003, col 18, 51-59. Pickens'003 similarly teaches that although increasing Mg could increase strength/toughness, the results "vary more" at the highest reported Mg, 0.6 wt.%.. Id. col. 11; ln. 3. Fig. 3 of Pickens also teaches that the improvement related to Mg additions level off, but still increasing.

21. In addition, Pickens teaches that Cu and Li, not Cu and Mg, should be manipulated in order to control the properties of its alloys (strength, fracture resistance) at cryogenic temperatures like -196°C. "The amounts of Cu and Li employed are interdependent. For example for copper levels at the high end of the broad range, e.g., 6.5%R, the level of lithium should be close to about 1.0% to achieve the desirable cryogenic fracture toughness trend at high strength levels. At the lower end of the broad Cu range, e.g., 2.0%, more Li can be present but the

highest strengths attainable will conversely be lower..." Pickens '003, col 17, 44-50, emphasis added. Pickens further teach that "the highest strengths are attained with Li levels from about 1.05 to about 1.35%, a peak at 1.2% lithium." Id. col 17, 60-65.

22. As the Examiner has noted, Pickens'003 patent also teaches using up to 1.0wt% of a grain refiner, up to 0.8 wt.% Ag or up to 1.0% Zn. Office Action, ¶2, pg. 3. Thus, when read as a whole, Picken's teaches those of ordinary skill to add additional alloying and grain refining elements.

23. In sum, one of ordinary skill, reading Pickens'003 as a whole, wishing to increase the cryogenic alloys strength/toughness of a cryogenic alloy to a level appropriate for aerospace applications, would be at most be invited to experiment with increases in Cu, Mg, Ag, Zn, and Li levels, but without regard for the solubility limit of the alloy.

24. Thus, upon following these teachings, it is respectfully pointed out that the solubility limits of the alloy would be exceeded, (e.g. as in Example 5) and δ phase precipitates created. This in turn would result in lowered fatigue crack growth resistance. Since those of ordinary skill thought δ phase particles were beneficial to fatigue crack growth resistance, they would not be directed to nor likely to discover that, as the present inventors had, the solubility limit for the inventive alloys should not be exceeded.

25. Thus, one of ordinary skill, following the express teachings of Pickens'003 patent, would not discover the benefits of maintaining the amount of

alloying elements below the solubility limit of the alloy. In short, although Pickens might disclose a test sample near the ranges claimed, Pickens does not teach or suggest using the ranges now claimed in claims 1, 2, 3, 7, 13-15 and 20, or to control the levels of Mg and Cu so as to remain below the solubility limit of the alloy.

B. The Criticality of the Ranges (Cu, Mg, and Li) particularly for Controlling the level of Mg and Cu, is Demonstrated by the Examples and Data Presented in the Instant Application

26. The present application expressly teaches the criticality of the ranges for Cu, Mg, and Li for producing aerospace appropriate alloys. For example, in Fig. 5, Comparative data is presented for inventive alloys having increasing amounts of Li, with Mg at 0.75 wt.%; to known data for AA2524 heavy gauge fuselage sheet. The trends depicted there demonstrate that increasing amounts of lithium beyond the presently claimed range, in the presence of Mg and Cu within the claimed ranges, would result in a dramatic decrease in fracture toughness, Kc and Kapp.

27. The specification expressly teaches this criticality of this relationship, that "Within the controlled copper and magnesium ranges, the range of lithium content may be from about 0.01 to 0.9 weight percent, preferably 0.1 or 0.2 weight percent to about 0.7 or 0.8 weight percent... However, at lithium levels above the present levels, fracture toughness decreases significantly. Furthermore, care should be taken in not adding too much lithium since exceeding the maximum

solubility will lead to low fracture toughness and low damage tolerances." Specification, ¶37.

28. The specification further contains additional teachings regarding the criticality of the ranges for each of the other alloying elements.

29. Cu: "Care must be taken, however, to not add too much copper since the corrosion resistance can be reduced. Also, additions beyond the maximum solubility can lead to low fracture toughness and low damage tolerance". Specification, ¶32.

30. Mg: "Care should be taken, however, to not add too much magnesium since magnesium additions beyond maximum solubility will lead to low fracture toughness and low damage tolerance. Specification, ¶33

31. All Others/Solubility Limit: "... the total amount of Cu and Mg added to the alloy is kept below the solubility limits shown in Fig. 1.... The solubility limits may decrease, e.g. from the first to the second solubility limit, as the amount of other alloying additions is increased. For example, additions of Li, Ag and/or Zn may tend to lower the solubility limit of Cu and Mg." Specification, ¶34. "It has been found that the combination of lower copper levels, higher magnesium levels and lower levels of lithium produce an alloy that has increased fracture toughness and strength, superior fatigue crack growth resistance and relatively low density. Fracture toughness and strength are critical properties for aluminum alloys used in aircraft applications. Fatigue crack growth resistance is also a critical

property for damage tolerant aircraft parts, such as fuselage sections and lower wing sections. Specification, ¶44.

32. Finally, the criticality of the claimed ranges is further shown by Example 5 (Table 2) of the present application. Specification, ¶46. The example 5 alloy, presented as a negative example in the present application, one outside the claimed range of Li%, but meets the preferred limitations of the Pickens'003 patent. See Pickens'003, Table 1. As can be seen in Table 3 of the instant application, the toughness and % elongation of this alloy are significantly less than those within the presently claimed ranges. This further shown graphically in the present application in Figures 2-5. In addition, in Fig. 9 of the present application, data is presented which shows the improvement in fatigue crack growth for alloys having lithium in the instant ranges at a T3 temper (alloy C and alloy D) versus an alloy with no lithium (alloy A).

33. Given these express teachings and evidence regarding the criticality of the ranges taught and presently claimed, applicant respectfully submits that any *prima facie* case for obviousness is rebutted.

III. Response to Paragraph 5: Applicant's Withdrawal of Claims 16 and 17 Obviates the Rejection

34. Applicant withdraws claims 16 and 17 without prejudice, specifically preserving the right to this subject matter in future applications.

35. Therefore, the rejection made in ¶5 of the office action is no longer applicable to the present application.

IV. New Claims 25 and 26 Are Also Patentable over Pickens'003

36. The Pickens'003 application is essentially silent on the issue of increasing the damage tolerance and fatigue crack growth resistance of its cryogenic alloys, and the relationship therein to the solubility limit of the alloy.

37. Similarly, Pickens'003 is also silent on the application of the present inventive alloy in aerospace structural parts such as those requiring high damage tolerance and fatigue crack growth resistance.

38. Thus, applicant submits claims 25 and 26 to more clearly delineate the instant invention. Allowance of these new claims is respectfully requested.

All rejections having been traversed above, it is respectfully submitted that the present application is in condition for allowance. If the Examiner would like to suggest changes of a formal nature to place this application in better condition for allowance, a telephone call to Applicants' undersigned attorney would be appreciated.

Respectfully submitted,

Daniel Mark Maloney, Esq.
Attorney for Applicants
Reg. No. 43,771
Tele. No. 724-337-6368

CUSTOMER NUMBER
08840
PATENT TRADEMARK OFFICE

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

97-2301 CIP

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	26	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	26 minus 20=	* 6
INDEPENDENT CLAIMS	1 minus 3 =	* 0
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
X$ 9=		OR	X$18=	72
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL		OR	TOTAL	842

CLAIMS AS AMENDED - PART II

3/31/05

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 25	Minus	** 24	= 1
Independent	* 2	Minus	*** 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	50.00
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

4/28/05	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 26	Minus	** 25	= 1
Independent	* 3	Minus	*** 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	50.00
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

5/29/05	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 26	Minus.	** 26	= 0
Independent	* 3	Minus	*** 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

FORM PTO-875 (Rev. 10/03) Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

ATTENTION ATTENTION ATTENTION

Method of Refund:

☐ **ACH/EFT**

☐ **Credit Card**

☒ **Deposit Account #** 50-0859

☐ **Treasury Check**

Patent/TM/App/Serial # 10,678,290

Program Area TechCenter 1742

Date Processed 01-20-05

ATTENTION ATTENTION ATTENTION